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a soil organism which gains entrance through wounds and readily passes from the parent plant to the suckers. It spreads by diseased plants, infected soils, by farm implements, and on the clothing and boots of the laborers.—MEL. T. COOK.

Permeability.—STILES and JORGENSEN[18] have measured the effect of temperature on the rate at which hydrogen ions of hydrochloric acid are absorbed by the tissue of potato tuber. Disks of potato tubers 1 cm. in diameter, weighing about 0.5 gm., were immersed in HCl of concentration 0.0011 N. This low concentration was used in order to avoid injury to the tissue. Experiments were carried out at temperatures of 0° C., 10° C., 20° C., and 30° C. At intervals up to 8 hours the quantity of the hydrogen ions absorbed was measured by determining the loss of hydrogen ions in the bathing solution. The hydrogen ion content of the latter was measured by a hydrogen electrode, a description of which the authors give.

The rate of absorption was increased by a rise of 10° C. as follows: from 0° to 10°, 2.22 times; from 10° to 20°, 2.17 times; from 20° to 30°, 2.18 times. This is in agreement with the Van't Hoff law for the effect of temperature upon the rate of chemical reaction, and the authors conclude that "the study of the effect of temperature on the absorption of the hydrogen ion would seem to indicate that the absorption is controlled by some chemical action in the cell, and is not the result of simple diffusion through the plasma membrane, or of mere absorption by the cell protoplasm." Their view is that the acid reacts with some substance in the potato, that this substance is either present in large quantity as compared with the amount of acid fixed, or that the resulting compound is broken down again almost as soon as formed. As to the identity of the substance that reacts with the acid, they state it is "presumably the plasma membrane, or some part of it." The reviewer is not convinced yet, however, that in their experiments they were dealing primarily with the permeability of the plasma membrane. The title of the paper expresses the situation more exactly.—F. E. DENNY.

The humidity of a ravine.—It has long been commonly accepted that both the atmospheric humidity is greater and the supply of soil moisture more abundant in a narrow ravine than upon the adjacent upland, but no quantitative data have been available to confirm these observations. To supply these deficiencies ULLRICH[19] measured the evaporating power of the air at 15 different points in a clay ravine, and determined the range of soil moisture for a corresponding number of stations for a period of four months, from the beginning of July 1913. The results of both series of determinations are plotted graphically, and furnish many interesting details regarding the conditions for plant life in such a habitat. The variations in soil moisture, although considerable, do not indicate that this is the factor of most importance in promoting the greater mesophytism of the ravine habitat as compared with the upland. Evaporation differences show more contrast in these two habitats, as may be shown by a few examples. The average daily rates of evaporation from the standard atmometer for the open upland, the forested upland, the south-facing slope, the north-facing slope, and the bottom of the ravine were respectively 16.3, 8.7, 7.9, 6, and 4.7 cc. This shows very definitely that the more or less confined atmosphere of the lower parts of rather narrow ravines has frequently only about one-half the evaporating power possessed by more freely circulating air of the forested upland. Maps of the region north of Chicago in which the ravine is located and of the ravine itself, together with the tabulation and plotting of data and photographs of the vegetation at the various stations, add to the value of the paper.—GEO. D. FULLER.

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[18] STILES, WALTER, and JORGENSEN, INGVAR, Studies in permeability. II. The effect of temperature on the permeability of plant cells to the hydrogen ion. Ann. Botany **29**:611–618. *figs. 4.* 1915.

[19] ULLRICH, F. T., The relation of evaporation and soil moisture to plant succession in a ravine. Bull. Ill. State Lab. Nat. Hist. **12**:1–16. *pl. 18.* 1915.

New Zealand vegetation.—A non-technical but truly scientific description of the vegetation of any land is interesting and useful, even to botanists, in forming a general concept of the plant growth of that region. In such an article COCKAYNE[20] has sketched the flora of New Zealand, and has managed to include many facts within the limits of a few pages. Analyzing the composition and affinities of the flora, he finds 74 per cent endemic, while Malayan, Australian, and subantarctic elements follow in decreasing importance, and the final touch is given by a remarkable element composed of species either closely related to or identical with those of the northern hemisphere.

Among the various plant communities characterized are the rain forest, the southern beech forest, the tussock steppe, the swamp, and the subalpine fell-field. The first of these originally covered all the lowland and montane regions of North Island, and considerable portions of the west and south of South Island. This rain forest was remarkable for the abundance of conifers in such genera as *Dacrydium*, *Podocarpus*, and *Agathis*, mingled with broad-leaved evergreens, woody climbers, ferns, mosses, and liverworts in luxuriant profusion. Very different from the rain forest, but quite as distinctive, was the tussock steppe, dominated by large grasses of the tussock habit of growth. The principal species were *Danthonia Raoulii*, *Poa caespitosa*, and *Festuca novae-zealandiae*. Somewhat less attention is devoted to the beech forest with five species of *Nothofagus*, the heath thickets, swamps, sand dunes, and mountains; while the article closes with some statistics of plant families, genera, and species.—GEO. D. FULLER.

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[20] COCKAYNE, L., The primitive vegetation of New Zealand. Jour. Agric. (New Zealand) **9**:401–410. 1914.